

Appl. No. 10/686,340  
Response Dated June 28, 2005  
Reply to Office Action of March 28, 2005

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (cancelled)
2. (currently amended) ~~The method of claim 1 and further comprising:~~ A method of reducing a zero-echo comprising:  
transmitting a pulse to a line to be tested;  
generating a zero-echo canceling signal based on the transmitted pulse;  
receiving a zero-echo;  
adding or combining the zero-echo and the zero-echo canceling signal to reduce the received zero-echo; and  
calculating an error signal as a difference between the zero-echo and the zero-echo canceling signal.
3. (original) The method of claim 2 and further comprising adjusting the zero-echo canceling signal based on the error signal to decrease the error signal and decrease a received zero-echo.
4. (currently amended) The method of claim ~~1~~ 2 and further comprising receiving a full-path reflection, wherein the zero-echo has been sufficiently cancelled or attenuated based on said adding or combining to allow the full-path reflection to be detected.

Appl. No. 10/686,340  
Response Dated June 28, 2005  
Reply to Office Action of March 28, 2005

5. (currently amended) The method of claim 1 wherein said transmitting a pulse comprises: transmitting a pulse to a line to be tested, a portion of the transmitted pulse also propagating via a short path towards a receiver as the zero-echo.

6. (original) The method of claim 4 wherein the adjusting comprises adjusting the value of a voltage bridge or adjusting the value of a variable resistor.

7. (currently amended) An apparatus comprising:  
a pulse transmitter to transmit a pulse to a line to be tested;  
a receiver adapted to receive a reflection of the transmitted pulse; and  
a zero-echo canceling system coupled to the transmitter and receiver, the zero-echo canceling system adapted to at least partially cancel a received zero-echo by generating a zero-echo canceling signal based on the transmitted pulse and to calculate an error signal as a difference between the zero-echo and the zero-echo canceling signal.

8. (original) The apparatus of claim 7 and wherein the zero-echo canceling system comprises a zero-echo canceller adapted to generate a zero-echo canceling signal.

9. (original) The apparatus of claim 7 and wherein the zero-echo canceling system comprises:

a voltage divider coupled to the transmitter;  
a zero-echo canceller coupled to the voltage divider;

Appl. No. 10/686,340  
Response Dated June 28, 2005  
Reply to Office Action of March 28, 2005

a combining circuit coupled to the voltage divider and the zero-echo canceller, the combining circuit adapted to combine a zero-echo received from the voltage divider and a zero-echo canceling signal received from the zero-echo canceller.

10. (original) The apparatus of claim 9 wherein the combining circuit comprises an adder.

11. (original) The apparatus of claim 9 wherein the combining circuit comprises a subtraction circuit.

12. (original) The apparatus of claim 8 wherein the zero-echo canceller comprises a variable voltage divider.

13. (original) The apparatus of claim 12 wherein the variable voltage divider comprises a variable resistor.

14. (currently amended) A modem comprising:  
a transceiver;  
a processor coupled to the transceiver;  
a zero-echo canceling system coupled to the transceiver and the processor, the zero-echo canceling system adapted to at least partially cancel a zero-echo by generating a zero-echo canceling signal based on a transmitted pulse and to calculate an error signal as a difference between the zero-echo and the zero-echo canceling signal.

Appl. No. 10/686,340  
Response Dated June 28, 2005  
Reply to Office Action of March 28, 2005

15. (original) The modem of claim 14 and further comprising a memory coupled to the processor.

16. (original) The modem of claim 14 wherein the zero-echo canceling system comprises:

- a voltage divider coupled to the transmitter;
- a zero-echo canceller coupled to the voltage divider;
- a combining circuit coupled to the voltage divider and the zero-echo canceller, the combining circuit adapted to combine a zero-echo received from the voltage divider and a zero-echo canceling signal received from the zero-echo canceller.

17. (original) The modem of claim 14 wherein the modem comprises a cable modem.

18. (original) The modem of claim 14 wherein the modem comprises a DSL modem.